

Chapter 6.8 WETLANDS ASSESSMENT and PROGRAM INITIATIVES

Wetlands are lands transitioning between terrestrial and deep-water habitats where the water table is usually at or near the land surface or where the land is covered by shallow water (Cowardin *et al.*, 1979). Virginia has many different types of wetlands. Salt marshes include the extensive estuarine wetlands along the Chesapeake Bay that are characterized by vegetation tolerant of brackish to salty water. Other tidal marshes include estuarine wetlands located along freshwater parts of tidal rivers. Interdunal swales are topographic depressions among sand dunes on the Atlantic coast that contain palustrine emergent or scrub-shrub wetlands. Virginia's Atlantic white cedar swamps, red maple swamps, and cypress-tupelo swamps and its nontidal flood-plain forests are freshwater, non-tidal (also called "palustrine") forested wetlands that have seasonally occurring standing water and flood-tolerant trees. Pocosins are freshwater, non-tidal scrub-shrub wetlands that are slightly elevated above the surrounding landscape and have flat topography and poor natural drainage. Virginia's bogs, fens, and wet meadows are freshwater, non-tidal emergent wetlands that are often underlain by organic soils.

Wetlands occupy approximately four percent of Virginia's land mass (Dahl, 1990). Based on the United States Fish and Wildlife Service National Wetlands Inventory mapping completed to date, vegetated palustrine wetlands cover approximately 1,075,443 acres of Virginia, and are by far the most abundant type of wetland in Virginia. Estuarine wetlands cover 190,996 acres, lacustrine wetlands 193 acres and riverine wetlands 380 acres (Hershner *et al.*, 2000). In addition, isolated wetlands (i.e. those wetlands occurring in depressions or fed by groundwater, with no surface water connection to other state waters) account for anywhere from 179,849 to 411,246 acres depending on the method used to estimate these areas (Hershner *et al.*, 2000). Virginia is in the final stages of developing more accurate geographic information system (GIS) based estimates of the acreage of wetlands by watershed and wetland type.

Virginia includes five physiographic provinces: the Coastal Plain, Piedmont, Blue Ridge, Valley and Ridge, and Appalachian Plateaus. Geologic features, landforms, and soils that directly affect the hydrology of wetlands characterize each province. Approximately 72 percent of the wetland area in Virginia, including all the estuarine wetlands and most of the large nontidal palustrine wetlands, are in the Coastal Plain (Tiner and Finn, 1986). Extensive estuarine wetlands have developed in low-lying areas along the shores of the Chesapeake Bay and its tributaries and behind the barrier beaches of the Atlantic coast. Palustrine wetlands are distributed throughout the State and are located primarily in bottomlands and in flood plains along stream channels, especially in headwater areas. Approximately 22 percent of the wetlands in Virginia are in the Piedmont, and the remaining 6 percent are in the Appalachian Plateau (Tiner and Finn, 1986; Harlow and LeCain, 1991).

Virginia has experienced great losses of wetlands as a result of human-related development. In the 1780's, wetlands covered about 1,849,000 acres (more than 7 percent) of Virginia (Dahl, 1990). By the mid-1980's, when permits began to be required for most impacts to wetlands, about 1,075,000 wetland acres remained in Virginia – a loss of about 42 percent in 200 years (Dahl, 1990). Agriculture and forestry, industrial and urban development, and recreation have led to the draining, dredging and ditching, filling, diking and damming of wetlands in Virginia. According to a Chesapeake Bay Foundation fact sheet (2001), Virginia lost more than 770,000 acres of wetlands, for an average annual loss of 3,870 acres, during the 200-year period from the 1780s to the 1980s. From 1982 to 1989, Virginia lost more than 17,800 acres of its Chesapeake Bay watershed wetlands at an annual loss of 2,500 acres. While the most recent data have not been finalized, most experts agree that significant annual wetland losses continued during the 1990s. Further, during 1998 and 1999, more than 2,500 additional acres of non-tidal wetlands in Virginia were ditched for development, and additional acres of isolated wetlands were destroyed. From mid-1980 to the late 1990's, 80% of estimated losses of freshwater vegetated wetlands (mostly forested systems) occurred in the Coastal Plain. Wetland trends for the Norfolk/Hampton region of Virginia indicated a loss of about 4,800 acres of vegetated wetlands between 1982 and 1989-90 (Tiner and Foulis, 1994). The net loss of wetland areas has slowed since 2000 due to stricter laws, greater enforcement, and new mitigation strategies. Table 6.8-1 depicts permitted wetland impacts with associated compensation by wetland type for 2002 through 2006.

Table 6.8-1 VWP Permitted Wetland Impacts & Associated Compensation

Wetland Type	Permitted Acreage					Totals	Compensated* Acreage					Totals
	2002	2003	2004	2005	2006		2002	2003	2004	2005	2006	
Tidal Open Water	10.960	2.360	0.000	0.000	3.960	17.280	0.640	0.290	0.000	0.000	1.060	1.990
Tidal Emergent	0.010	8.410	0.925	0.040	0.340	9.725	0.140	8.600	1.099	0.040	0.400	10.279
Tidal Nonvegetated	12.880	11.950	0.297	0.000	0.420	25.547	3.530	12.610	0.297	0.000	0.280	16.717
Subtotal	23.850	22.720	1.222	0.040	4.720	52.552	4.310	21.500	1.396	0.040	1.740	28.986
Isolated, Non-tidal Emergent	0.835	1.221	0.693	1.170	2.868	6.787	0.997	1.239	0.603	1.030	3.275	7.144
Isolated, Non-tidal Scrub-Shrub	0.130	1.300	0.070	0.000	1.070	2.570	0.200	1.950	0.070	0.000	1.450	3.670
Isolated, Non-tidal Forested	1.163	1.653	1.102	2.886	3.298	10.102	1.050	3.246	2.124	5.420	6.418	18.258
Subtotal	2.128	4.174	1.865	4.056	7.236	19.459	2.247	6.435	2.797	6.450	11.143	29.072
Non-tidal Open Water	6.090	11.391	12.111	6.474	29.486	65.552	3.870	19.494	20.947	1.636	28.706	74.653
Non-tidal Emergent	58.081	45.715	38.870	23.263	112.072	278.001	57.560	52.014	38.685	25.182	120.015	293.456
Non-tidal Scrub-shrub	27.338	28.240	16.981	7.111	16.225	95.895	92.859	27.883	18.802	8.952	26.144	174.640
Non-tidal Forested	117.158	302.372	116.892	81.176	188.460	806.058	239.318	936.102	422.288	147.846	386.750	2132.304
Subtotal	208.667	387.718	184.854	118.024	316.757	1216.020	393.607	1035.493	500.722	183.616	532.909	2646.347
Total	234.645	414.612	187.941	122.120	328.713	1288.031	400.164	1063.428	504.915	190.106	545.792	2704.405

* Compensated acreage includes restoration, creation, preservation, purchase of mitigation bank credits, and contributions to an approved In-Lieu Fee (ILF) Fund.

Wetlands Definitions and Standards

Wetlands may be defined in different ways with regard to jurisdictional issues, but all wetlands have in common a seasonal pattern of hydrology or continuous inundation, characteristic hydric soils, and vegetation adapted to growing under saturated condition. The Wetlands Act of 1972 (Title 62.1 of the Code of Virginia) defines tidal wetlands for the purposes of protecting the resource and regulating development. Under this definition, tidal wetlands are found in the 29 counties and 17 cities that comprise Tidewater, Virginia. Specifically, vegetated tidal wetlands are defined as "all land lying between and contiguous to mean low water and an elevation above mean low water equal to the factor 1.5 times the mean tide range at the site of the proposed project in the county, city or town in question," and on which are growing one or more of 37 specified species of wetlands vegetation. Non-vegetated wetlands are defined as all other lands between mean low water and mean high water. The Act does not include a definition for non-tidal wetlands. Further, it does not include all lands that are considered to be wetlands under the federal definition, seasonally tidal areas included. Although the Wetlands Act was initially limited to vegetated tidal wetlands, subsequent amendments included two discrete areas subject to wind tides along the North Landing River and Back Bay in southeastern Virginia.

The definition of wetlands contained in the DEQ's earlier Wetlands Policy is as follows: "The wetlands of the Commonwealth, including marshes, swamps, bogs and other low-lying areas, which during some period of the year will be covered in part by natural non-flood waters, are unique, valuable and an irreplaceable natural resource." This definition was modified and included in the Virginia Water Protection Permit (VWPP) regulation (9 VAC 25-210-10 *et seq.*) in 2001 as follows, and parallels the federal definition of wetlands contained in Section 404 of the Clean Water Act: "Wetlands mean those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and, under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Wetlands are part of State Waters per Section 62.1-44.3 of the Code of Virginia. State Waters means "all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands." Water quality standards for wetlands are the same as those water quality standards for other surface waters, per 9 VAC 25-260-10 *et seq.* In particular, Virginia has "free from" narrative wetland criteria, numeric criteria based on EPA 304(a) criteria, fishable/swimmable designated use, and an antidegradation policy that is the same for all surface waters.

To determine the extent to which wetlands, as part of State waters, meet the objectives of the CWA, Virginia is developing a baseline data set, documenting current conditions and the general quality of wetlands throughout the state. Using a Geographic Information System (GIS), a baseline map has been developed by overlaying wetlands, as depicted on National Wetland Inventory (NWI) maps and other data sources listed previously, and a wetland quality indicator developed from the use of a stressor checklist tool and wetland landscape position. This information can be reported in the context of wetland types, land use, landscape position, or by watersheds, depending upon the information needed. Preliminary data and mapping has been uploaded to a web-access server, hosted by the Virginia Institute of Marine Science (VIMS). The format of this data will allow anyone to search the data base by several parameters. The preliminary data can be viewed at <http://ccrm.vims.edu/>

As additional data is collected, Virginia will use this sequential survey information to look at changes in wetland quantity and quality over time. This temporal analysis will be accomplished by continuing to refine the wetland database with information on wetland losses and gains in each watershed using the permit tracking database, as well as periodically conducting wetland quality assessments in select watersheds to make inferences on wetland condition. This in turn will allow for management decisions to be made that could provide additional protections for watersheds experiencing significant declines in wetland quantity and/or quality. For instance, monitoring information could be used to identify exceptional value wetlands that should have greater protection within the context of permitting programs. Conversely, degraded wetlands could be identified that would be good candidates for targeting wetland restoration projects.

Further, wetland monitoring data will be used in conjunction with other water monitoring data to evaluate the effectiveness of wetland protection programs in terms of meeting the goal of no net loss of wetland acreage and functions. This will be accomplished through Section 305(b) reporting, and will include a determination of whether the wetland regulatory program is attaining this goal. In addition, wetland monitoring

information can be used within the context of the following programs to address additional management measures: Section 319 (nonpoint source control), Section 314 (Clean Lakes), Section 303(d) Total Maximum Daily Loads (TMDLs), Section 402 (NPDES permits), and water quality standards modifications.

Wetland Laws and Regulations

Development activities in wetlands in Virginia are regulated by the U.S. Army Corps of Engineers (the Corps) through Section 404 of the Clean Water Act, the Department of Environmental Quality, through the VWPP program and Section 401 of the Clean Water Act; and the Virginia Marine Resources Commission (VMRC) and local Wetland Boards through the Virginia Tidal Wetlands Act of 1972.

- **Tidal Wetlands Act**

The Virginia Tidal Wetlands Act of 1972 is codified in Title 28.2, Chapter 13, Code of Virginia, and is administered by the VMRC. The Act authorizes local governments to establish local wetland boards that exercise jurisdiction and issue permits for wetlands development, subject to adoption of a model wetlands zoning ordinance. While most Tidewater localities have wetland boards, in those areas without boards permits for wetland development must be obtained from VMRC. The Commission reviews all decisions made by the local boards and has the authority to modify, remand, or reverse those decisions. The Act also requires that the Virginia Institute of Marine Science (VIMS) maintain an inventory of vegetated wetlands and provide advice and assistance to the VMRC on projects and on the development of wetland guidelines. The guidelines describe the values of each wetland community type and provide ranking according to the values.

- **Chesapeake Bay Preservation Act**

The Chesapeake Bay Preservation Act created the Chesapeake Bay Local Assistance Department (CBLAD), whose function is to protect water quality and the integrity of the Chesapeake Bay through the creation of Chesapeake Bay Preservation Areas (CBPAs) via local government ordinances. In 2005, the Chesapeake Bay Preservation Act authority was transferred to the Department of Conservation and Recreation (DCR) and the Division of Chesapeake Bay Local Assistance was established in DCR. The CBPAs restrict development in tidal wetlands and nontidal wetlands contiguous to tidal wetlands or free-flowing permanent streams through the establishment of buffer zones. Each local government within Tidewater, Virginia has developed regulations and ordinances regarding development within CBPAs, and is responsible for program implementation under the oversight of DCR-CBLA. The implementation of the regulations of this Act relies on local governments.

- **Virginia Water Protection Permit Program**

The Virginia Water Protection Permit (VWPP) constitutes the state Water Quality Certification required under Section 401 of the Clean Water Act, as well as serving as an independent state wetland program since 2000. Activities for which a water quality certificate are required include impacts to wetlands under Sections 402 and 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, Federal Energy Regulatory Commission licensing, and other appropriate federal permits or licenses. The State Water Control Board may issue blanket Section 401 Certifications for classes of Corps of Engineers Nationwide and Regional Permits that have minimal environmental impact and meet the requirements of state law.

Regulations for the VWPP were first promulgated on May 20, 1992. These regulations replaced the existing 401 regulatory procedures contained in the State Water Control Board's Procedural Rule No. 3. The VWPP Regulations (9 VAC 25-210 *et seq.*) define "surface waters", which are part of the definition of state waters, to include wetlands. This definition has closely followed the federal definition of "waters of the United States".

In 1996 and again in 1999, the Virginia General Assembly enacted legislation to encourage the use of Wetland Mitigation Banks. These "banks" were to be developed in accordance with federal guidance for the creation of wetland mitigation banks. Furthermore, the Virginia General Assembly enacted service area requirements for these banks that required any impacts compensated through the purchase of credits from the bank to be in the same or adjacent hydrologic unit within the same river watershed as the bank. The Great Dismal Swamp Wetland Mitigation Bank was the first bank in Virginia to be created subsequent to the

issuance of Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks (60 CFR 58605 *et seq.*). As of mid-2007, there were 45 approved wetland mitigation banks in Virginia, the majority of which are located in the Northern Virginia, metropolitan Richmond, and Tidewater areas. Additionally, there are approximately 17 proposed wetland mitigation banks in various stages of the review process.

In 2000, the Virginia General Assembly amended Section 62.1-44 of the Code of Virginia, relating to non-tidal wetlands, to establish and implement policies and programs to achieve no net loss of existing wetland acreage and functions. Additionally, the Section was amended to develop voluntary and incentive-based programs that achieve a net resource gain in acreage and functions of wetlands. The General Assembly actions removed the dependence of the VWPP program on the issuance of a Corps permit, thus enabling DEQ to regulate activities such as excavation in wetlands and fill in isolated wetlands, which are not currently under federal jurisdiction. The VWPP regulation (9 VAC 25-210-10 *et seq.*) was significantly revised to reflect these statutory changes, some of which became effective on July 2000, with complete implementation on October 1, 2001. A federal/state court case decided by the U.S. Fourth Circuit Court of Appeals in 2003 (*Treacy v. Newdunn Associates*, 4th Cir. Ct. 02-1480) upheld the Commonwealth's authority to regulate wetlands as "State Waters" independent of any federal wetland permitting action.

In addition, the 2000 General Assembly directed DEQ to develop General Permits for classes of activities such as linear transportation projects, utility projects and development projects, to expedite the permitting process in Virginia while maintaining the same high level of environmental protection. The General Permits were implemented in October 1, 2001 and revised in January 2005. During 2005, the General Permits underwent regulatory review and revision in August 2006 prior to their expiration. Each General Permit has specific thresholds for use (1 acre for utility projects and 2 acres for transportation, development, and mining projects, plus a non-activity specific permit for impacts less than 1/2 acre) and compensatory mitigation requirements, with a 45 day review and issuance time frame upon receipt of a complete registration statement.

Since first becoming a signatory state to the Chesapeake Bay Wetlands Policy in 1989, the Commonwealth of Virginia has remained committed to attaining a net gain in wetland acreage and functions within the Chesapeake Bay drainage. The General Assembly's actions in 2000 further confirm the Commonwealth's commitment to these goals, through establishing a statutory commitment to a net resource gain of non-tidal wetlands through voluntary programs. DEQ completed a grant from EPA in 2005 to educate the public on opportunities for voluntary wetland restoration projects and to coordinate reporting of voluntary wetland restoration projects being conducted by state and federal agencies and nonprofit groups in each Virginia watershed. The end product of the grant, an informational manual called *Restoring Virginia's Wetlands, A Citizen's Toolkit*, and can be found on DEQ's wetlands web page <http://www.deq.virginia.gov/export/sites/default/wetlands/pdf/restoringvawetlandstoolkit.pdf>.

- Coordination of Activities

In addition to the regulatory agencies, several state resource agencies are involved in reviewing activities for which VWP permits are required. Among these agencies are the Department of Game and Inland Fisheries (DGIF), the Department of Conservation and Recreation (DCR), Department of Health (VDH), and the Department of Agriculture and Consumer Services (DACS). Input is sought from these agencies through the permit application clearinghouse administered by the Virginia Marine Resources Commission (VMRC). Permitting activities are also coordinated with these agencies during cooperative site visits and periodic Joint Permit Application meetings sponsored by the Corps.

The actions taken in 2000 by the Virginia General Assembly included changes within DEQ that served to streamline the permitting process by more predictable review of permit applications within specified time frames and the ability to modify permits for minor changes without resubmitting an application. Additionally, the General Assembly requested that DEQ seek a State Programmatic General Permit (SPGP) from the Corps by July 2002, leading to a tiered system for the review and issuance of permits for wetland impacts in the Commonwealth, allowing the best use of resources between the Corps and DEQ. The Corps issued the final SPGP in August 2002 and implementation began on November 1, 2002. After being reviewed for its effectiveness and possibilities for increased streamlining of the two programs, the SPGP was modified in June 2007 to give DEQ additional oversight and permitting authority.

Wetland Monitoring and Assessment

A key aspect of the Commonwealth of Virginia's nontidal wetlands program is ensuring that there is no net loss of wetland acreage and function through permitted impacts and a net gain in wetland resource through voluntary programs. To accomplish these goals, the VWPP program received grants from EPA in August 2003, October 2004, October 2006, and October 2007 to determine the status of wetland resources in Virginia, in terms of location, extent, and overall quality of wetlands in each watershed. Using this information, the VWPP program can then track changes in wetland acreage and function, target certain watersheds and help determine the effectiveness of compensatory mitigation replacing lost wetland acreage and function. As a first step, Virginia has developed a long-term strategy for wetland monitoring and assessment, including the goals and objectives of a monitoring and assessment program and a time frame for implementation. This strategy will provide the ultimate framework for an ongoing assessment of the status of the Commonwealth's wetland resources and the success of both our wetland regulatory and voluntary programs. The end result will be the incorporation of on-going wetland monitoring and assessment into the Commonwealth's water monitoring programs.

The VWPP program, in coordination with the overall DEQ water monitoring program, has developed a ten-year plan for wetland monitoring and assessment in Virginia. The development of this strategy will follow the EPA March 2003 "Elements of a Wetland Monitoring and Assessment Program Checklist" and will include a discussion of the following elements:

- I. Monitoring Program Strategy
- II. Monitoring Objectives
- III. Monitoring Design
- IV. Core and Supplemental Water Quality Indicators
- V. Quality Assurance
- VI. Data Management
- VII. Data Analysis/Assessment
- VIII. Reporting
- IX. Programmatic Evaluation
- X. General Support and Infrastructure Planning

Additionally, the wetland monitoring and assessment strategy will incorporate the EPA May 2006 "Application of Elements of a State Water Monitoring and Assessment Program for Wetlands" (a supplement to the 2003 EPA document).

The first step in developing such a plan was to clearly articulate the goals and objectives of the assessment and monitoring of wetlands in Virginia. Virginia's focus is to use data generated under this grant to conduct reporting on status and trends of wetlands as part of Virginia's 305(b) report and evaluating the effectiveness of regulatory and voluntary programs in meeting Virginia's mandate of no net loss of wetland resources through regulatory programs and a net resource gain through voluntary programs. A final Wetland Monitoring and Assessment Plan was submitted to EPA in November 2005. Data continue to be collected under the wetland monitoring and assessment plan to increase the statistical accuracy of the data set.

Wetland Permit Compliance and Inspection

With the beginning of Virginia's full scale wetland protection program, resources were concentrated on developing and implementing regulations and reviewing and issuing permits. During this early period of the program, there was notable success in halting Tulloch ditching and unpermitted impacts to isolated wetlands through the program's comprehensive coverage of all state wetlands, as well as defending the state program and the non-reliance on federal jurisdiction before the U.S. Court of Appeals for the Fourth Circuit in the *Newdunn* decision. These activities, along with a limited state budget, left little time for an organized inspection and compliance program; instead DEQ has relied on irregular inspections of permitted activities as time permits and on responding to complaints to find unpermitted impacts. Inspections have identified both delays in notifications and report submittals as well as more serious violations involving exceeding impacts and failure to conduct mitigation.

In October 2005, DEQ received a three-year grant from EPA for the Development and Implementation

of an Inspection and Compliance Strategy for Virginia's Wetlands Permitting Program. DEQ will collect, analyze and act upon inspection data and compliance information relative to the wetland permitting program. DEQ will document environmental results by utilizing its baseline wetland monitoring data on the extent of wetlands, its permit database on permitted impacts and compensation and an improved inspection and compliance database, to assess how well Virginia is meeting its "No Net Loss" goal. At the end of the three-year grant period, there will be a detailed accounting of both permitted and non-permitted impacts and successful compensation to overlay on the baseline wetland database being developed under the Wetland Monitoring and Assessment Strategy. This work links directly to EPA's Strategic Plan Objective of Protecting and Restoring Ecosystems through Increasing Wetlands via state/federal partnerships aimed at ensuring no net loss and working toward a net gain of this important resource.

The first step in developing the Wetland Permit Compliance & Inspection Strategy was to hire an inspection coordinator to lead the development of a strategy, including researching procedures used in other water programs such as Virginia Pollution Discharge Elimination System (VPDES) and other states' inspection programs; completion of a compliance point tracking system for the cumulative assessment of violations and obtaining public input on the program. The strategy will dictate changes needed to DEQ's Comprehensive Environmental Database System (CEDS) to properly track permit compliance and to feed into our enforcement activities. These programming and procedural changes will need to be made prior to implementation to ensure that a comprehensive and accurate database is in place to measure the success of the program.

A compliance and inspection coordinator and three inspectors have been hired to focus on conducting inspections during completion of permitted activities and of mitigation sites, working on compliance matters, and coordinating with our enforcement division. DEQ has analyzed the permit database including the inspection data collected, in conjunction with the baseline information on the extent and quality of wetlands in each watershed, to determine how well Virginia is meeting its no net loss of wetland acreage and function goals, as mandated by Virginia's State Water Control Law. These activities are continuing into the third year of the grant, which is also focused on any needed revisions to the strategy or wetland regulations, guidance and procedures to improve DEQ's wetland program and to help achieve desired outcomes: less unpermitted impacts; improved compliance with permit conditions; and more effective compensatory mitigation. DEQ is assessing the feasibility of utilizing aerial surveillance procedures such as satellite imagery and digital mapping to look for unpermitted activities, particularly in areas experiencing high development pressures. The end result of this increased focus on permit compliance will be better protection of the Commonwealth's wetland resources and more definitive and defensible information on how we are achieving no net loss of wetland acreage and function in Virginia.

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